WM-100II/102

SERVICE MANUAL

- *WM-100II*

US Model
Canadian Model

- *WM-102*

AEP Model
E Model
UK Model

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
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Model Name Using Similar Mechanism	WM-F100II WM-F102
Tape Transport Mechanism Type	MT-WM102-01

0dB = 0.775V

SPECIFICATIONS

Frequency response (DOLBY NR OFF)
40–15,000 Hz (with the TAPE selector set to CrO_2/METAL)
40–15,000 Hz (with the TAPE selector set to NORM)

Power output
4.5mW + 4.5mW at dc operation
(at 10% total harmonic distortion)

Power requirements
1.5 V dc
Rechargeable battery
IEC designation (L)R6 battery (size AA)
DC IN 1.5V jack accepts:
Sony AC-D1 ac power adaptor (optional)
for use on 100, 120, 220 or 240 V AC, adjustable
Sony EBP-10 battery case (optional)
for use on two IEC designation R6 batteries (size AA)
Sony DCC-70 car battery cord (optional)
for use with 12 V car battery

Battery life (hours)

Battery	Tape playback
Sony NC-5WM rechargeable (full charge)	Approx. 2
Sony SUM-3(NS) New Super	Approx. 2
Sony Eveready AM3 alkaline	Approx. 5.5

For maximum performance we recommend the use of alkaline battery.

Dimensions
excl. projecting parts and controls
Approx.
69.8x110.8x19.8mm (w/h/d)
($2^3/_4 \times 4^3/_8 \times {}^{25}/_{32}$ inches)
with rechargeable battery pack attached
Approx.
69.8 x 119.4 x 19.8 mm (w/h/d)
($2^3/_4 \times 4^7/_8 \times {}^{25}/_{32}$ inches)
with battery pack attached
incl. projecting parts and controls
Approx.
74.6 x 112.6 x 22.2 mm (w/h/d)
($3 \times 4^1/_2 \times {}^7/_8$ inches)
with rechargeable battery pack attached
Approx.
74.6 x 120.2 x 22.2 mm (w/h/d)
($3 \times 4^7/_8 \times {}^7/_8$ inches)
with battery pack attached

Weight
Approx.
190 g (6.7 oz) incl. rechargeable battery pack and rechargeable battery, not incl. other accessories
Approx.
190 g (6.7 oz) incl. battery and battery pack, not incl. other accessories

STEREO CASSETTE-PLAYER

SONY®

MICROFILM

TC

Servicing Note

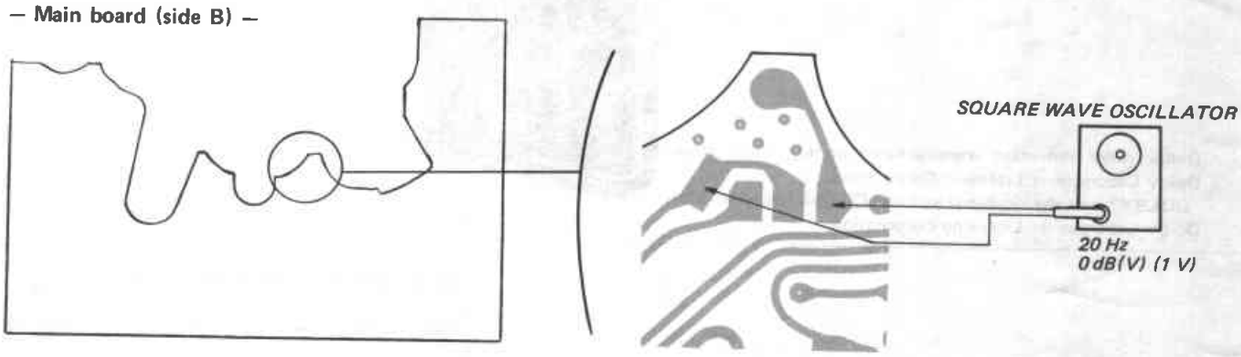
This set detects rotation of reel table by PH701 (Photo interrupter).

It cannot be detected when the main board is removed, because PH701 is mounted on the main board is removed.

Therefore, the auto off circuit and tape end detection will misoperate.

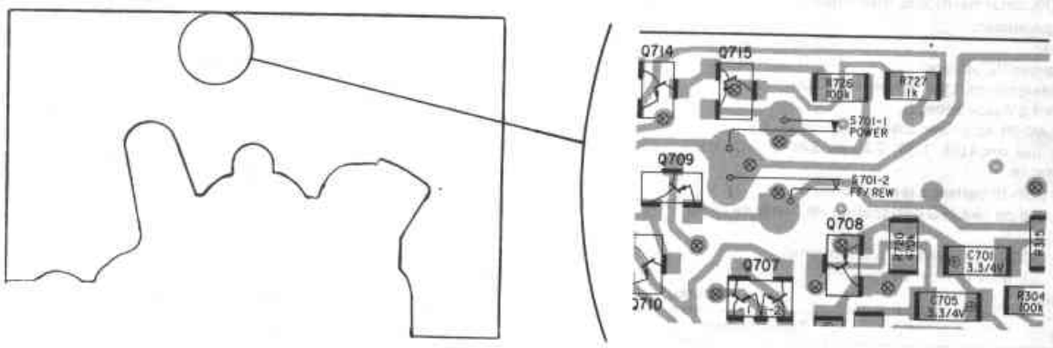
Operation check can be done by the method shown below even when the main board is removed.

– Main board (side B) –



- For PLAY, press the ▶ button and turn only the POWER switch ON.
- For FF and REW, press ▶▶ or ◀◀ button and turn both POWER switch and FF/REW switch ON.

– Main board (side A) –



Replacing chip components

All chip components should be connected and disconnected, using a tapered soldering iron [temperature of the iron tip: less than 280°C (536°F)], a pair of tweezers and braided wire.

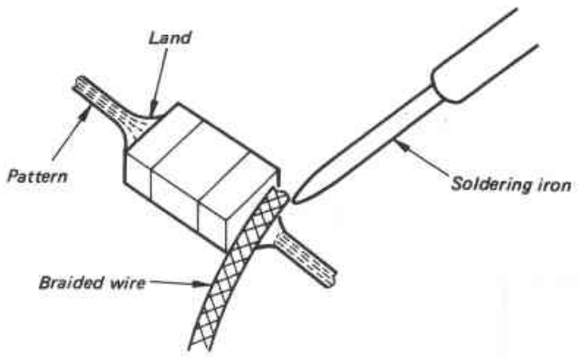
Precautions for replacement

1. **Do not disconnect the chip component forcefully. Otherwise, the pattern may peel off.**
2. **Never re-use a disconnected chip component. Dispose of all old chip components.**
3. **To protect the chip component, heating time for attaching the component should be within 3 seconds.**

○ Removing chip components

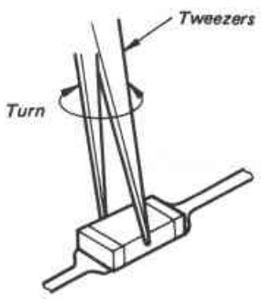
(1) Removing solder at electrode

Remove the solder at the electrode, using a thin braided wire. Do not remove the solder of the part (chip component) attached adjacent to the electrode.



(2) Disconnecting chip components

Turn the tweezers with the soldering iron alternately applied to both electrodes, and the chip component will be disconnected. Take careful precautions while disconnecting, because if the chip component is forcefully removed the land may peel off.
Never re-use a disconnected chip component.



(3) Smoothing the soldered surface

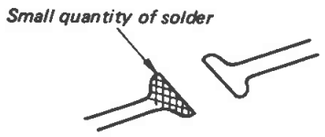
After disconnecting the chip component, remove the solder by using a braided wire to smooth the land surface.

○ Connecting chip components

The value of chip components is not displayed on the main body. Take due precautions to avoid mixing new chip components with other ones.

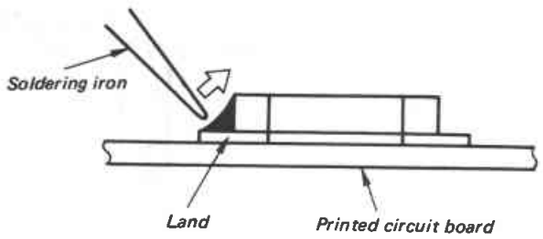
(1) Applying solder to land on one side

Apply a thin layer of solder to the land on one side where the chip component is to be connected. Too much solder may cause bridging.



(2) Speedy soldering

Hold the chip component at the desired position, using tweezers, and apply the soldering iron in the arrow-marked direction. To protect the chip component, heating time should be within 3 seconds.



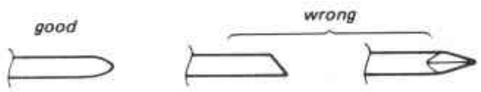
(3) Speedy soldering of electrode on the other side

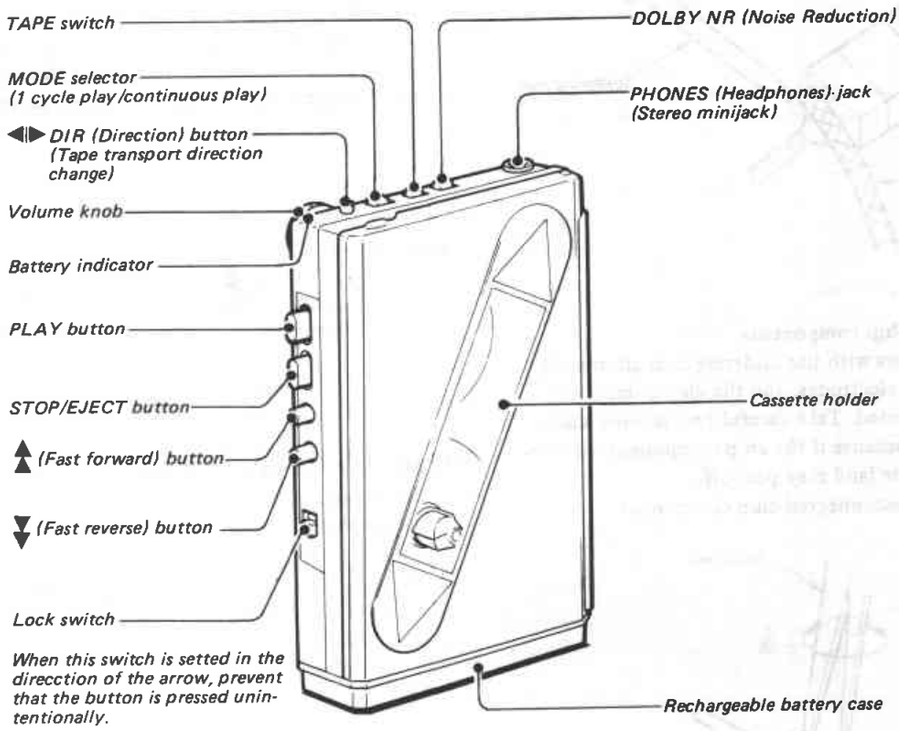
Solder the electrode on the other side in the same way as in (2) above.

Flexible Circuit Board Repairing

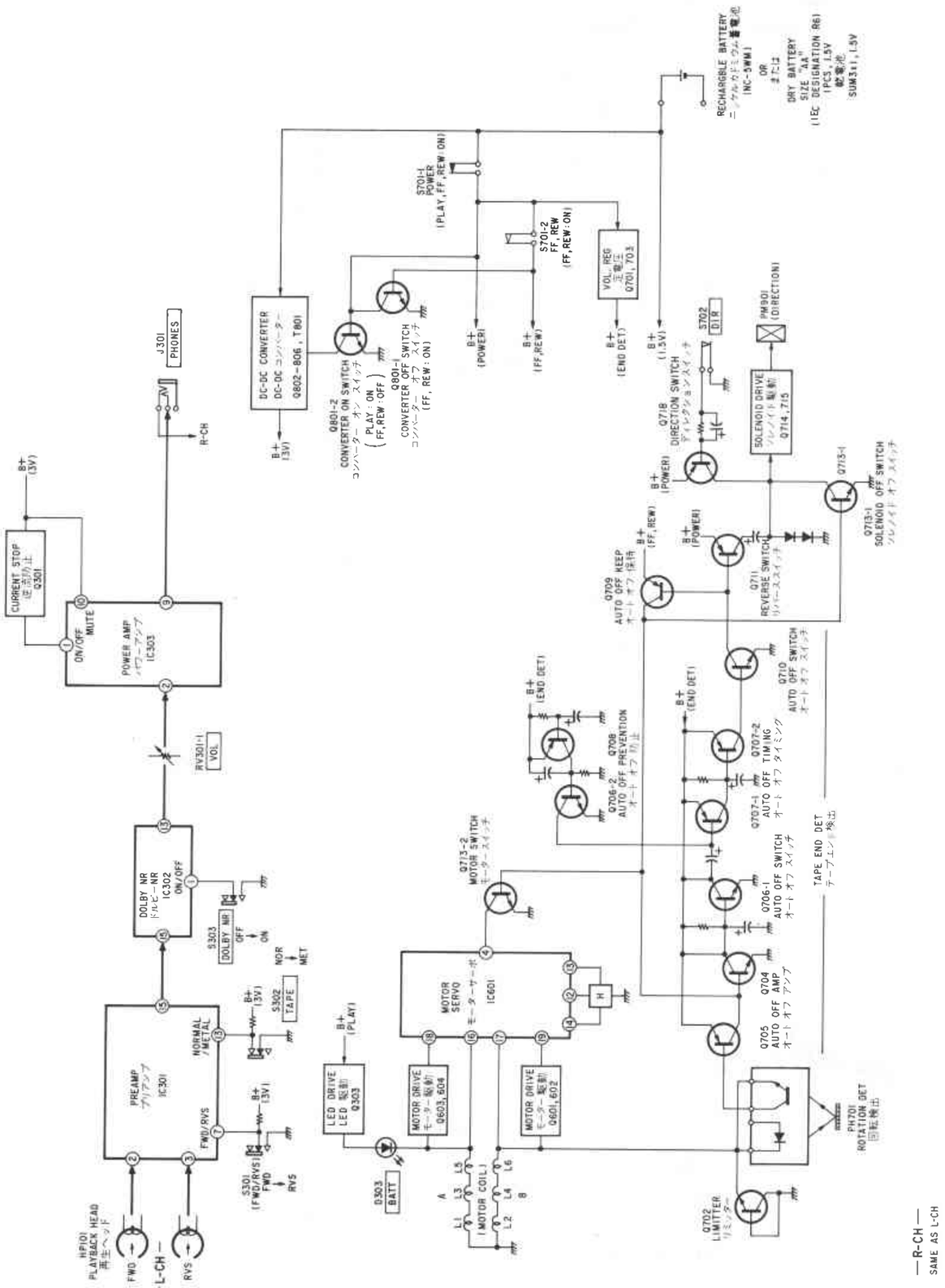
1. Keep the temperature of the soldering iron at $270^{\circ} \pm 10^{\circ}$C during repairing.
2. Do not touch the soldering iron more than 4 seconds or 3 times on the same conductor of the circuit board.
3. Do not apply force on the conductor when soldering or unsoldering.

Tip of soldering iron





SECTION 1
BLOCK DIAGRAM

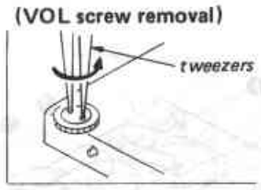


SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

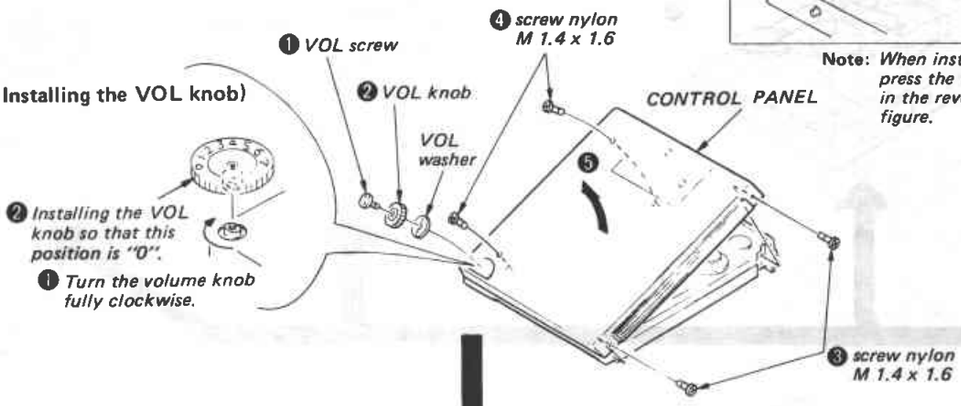
CONTROL PANEL

(VOL screw removal)



Note: *When installing the control panel, press the PLAY button and install in the reverse order given in the figure.*

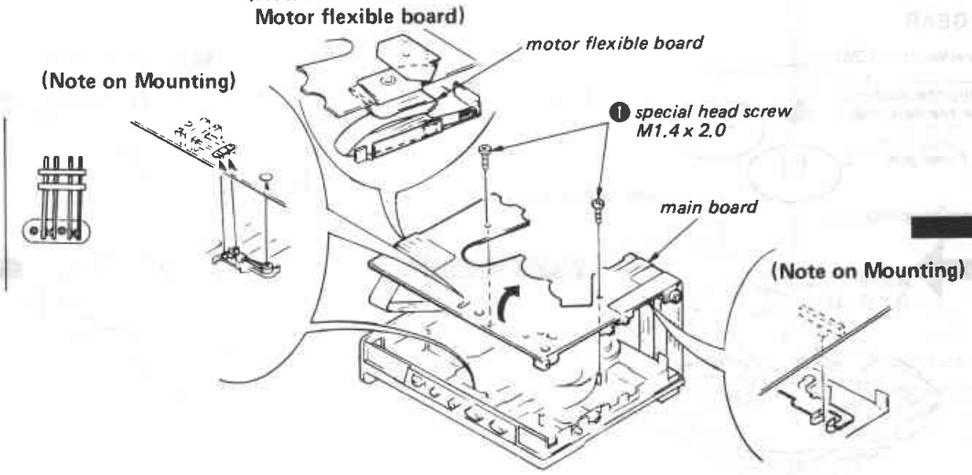
(Installing the VOL knob)


❶ VOL screw
❷ VOL knob
VOL washer
❹ screw nylon M 1.4 x 1.6
CONTROL PANEL
❺
❸ screw nylon M 1.4 x 1.6
❷ Installing the VOL knob so that this position is "0".
❶ Turn the volume knob fully clockwise.

MAIN BOARD

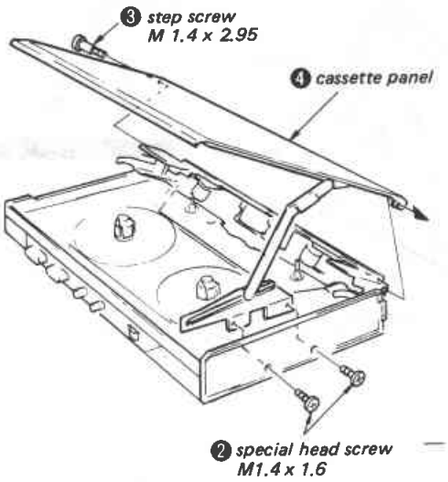
(How to handle Motor flexible board)

(Note on Mounting)

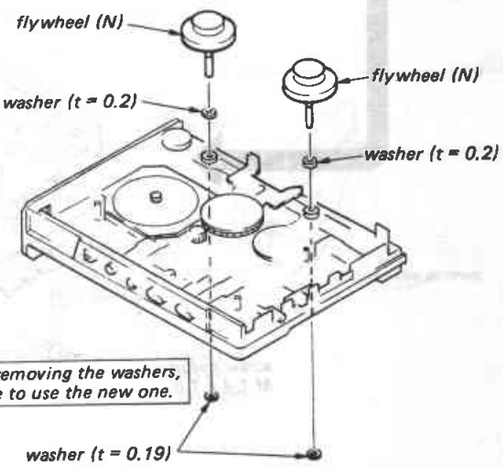


CASSETTE PANEL

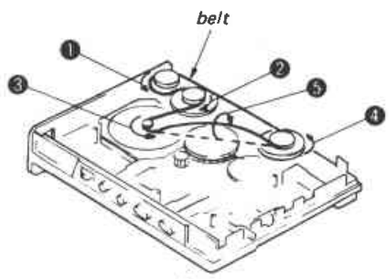
❶ *Open the cassette panel.*



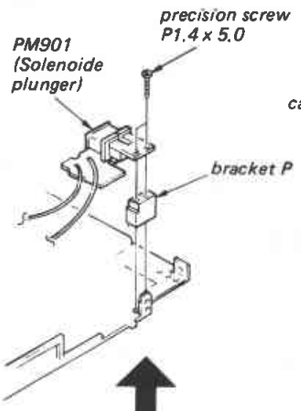
FLYWHEEL



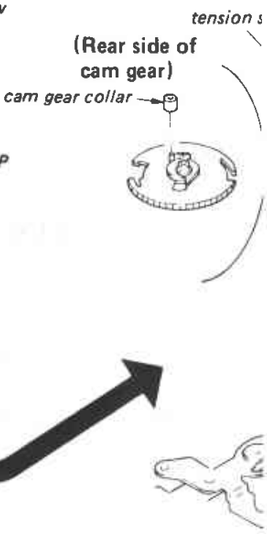
INSTALLING THE BELT



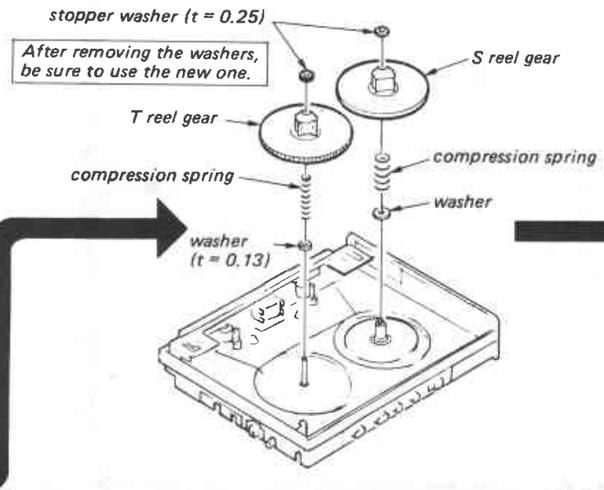
SOLENOID PLUNGER



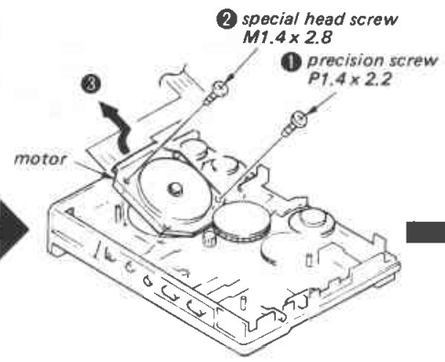
TRIGGER LEVER,



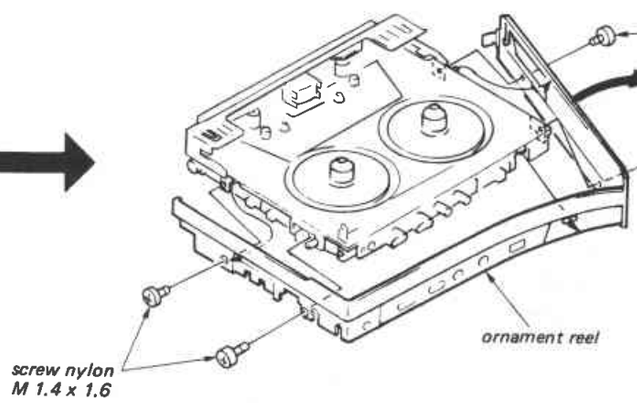
REEL GEAR



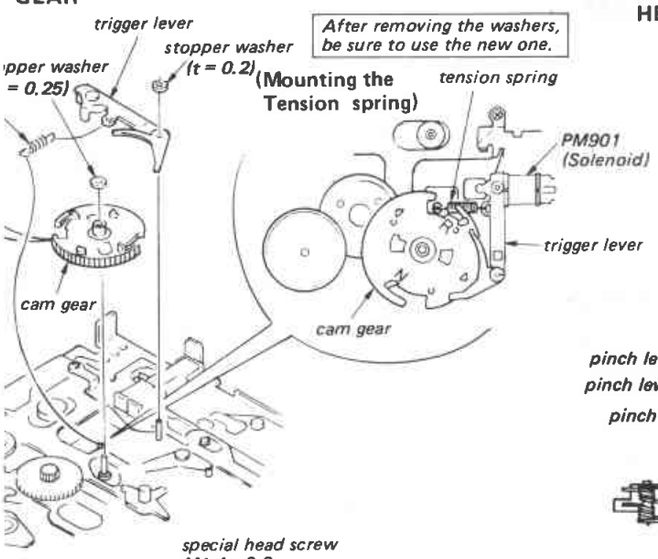
MOTOR



ORNAMENT REEL

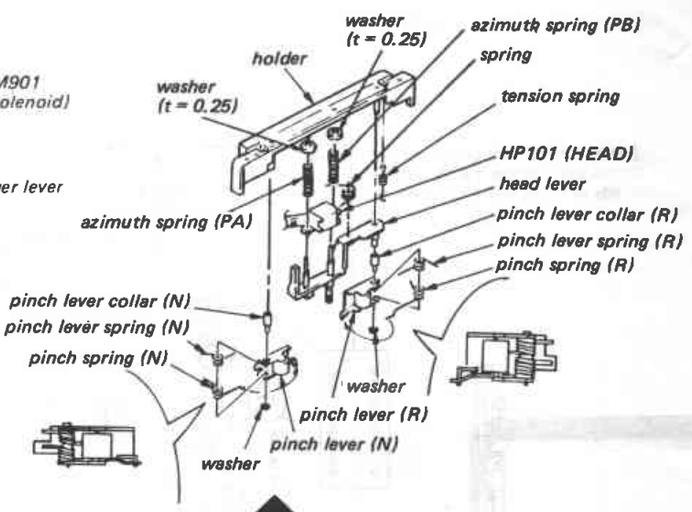


GEAR

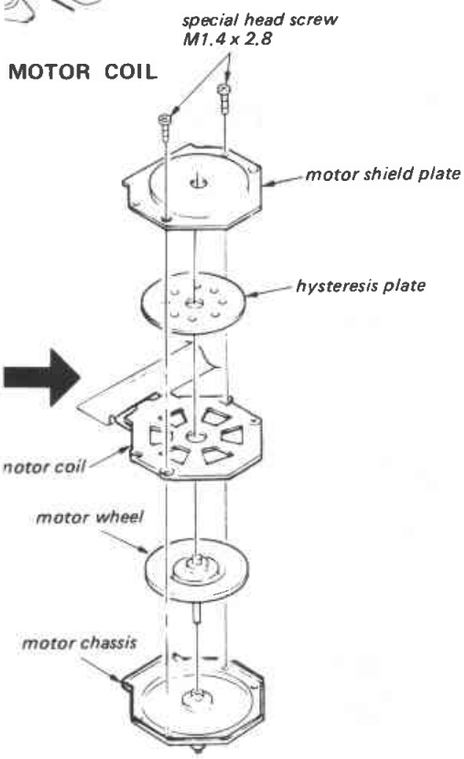


After removing the washers, be sure to use the new one.

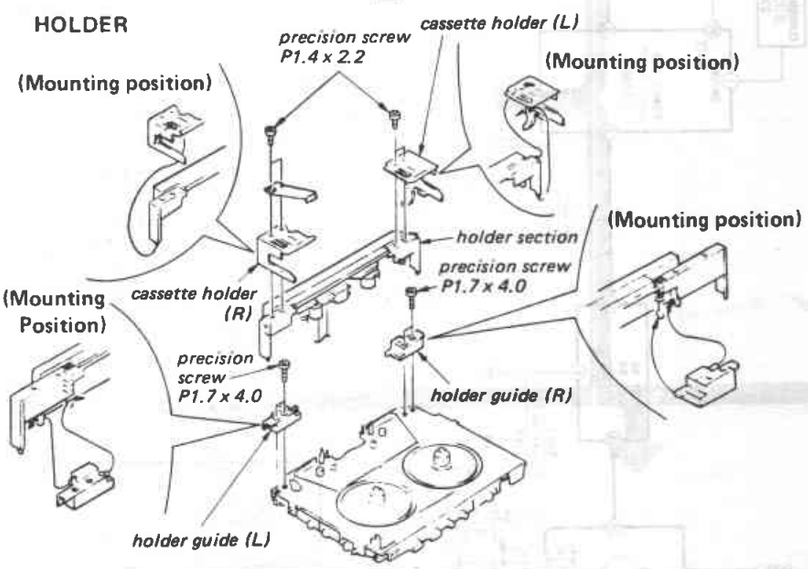
HEAD, PINCHROLLER



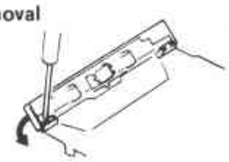
MOTOR COIL



HOLDER



Removal



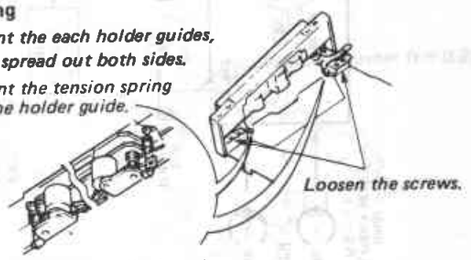
❶ Remove the cassette holder and remove the holder guide screws.

❷ Remove the holder section in the direction of the arrow.

Mounting

❶ Mount the each holder guides, with spread out both sides.

❷ Mount the tension spring on the holder guide.



It is easier to install when the tension spring is hooked on the holder guide as illustrated.

SECTION 3
ADJUSTMENTS

MECHANICAL ADJUSTMENTS AND MEASUREMENT

PRECAUTION

1. Clean the following parts with a denatured alcohol-moistened swab:

   playback head — rubber belts
   capstan — idlers
   pinch roller

2. Demagnetize the playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage (1.3V) unless otherwise noted.

Torque Measurement

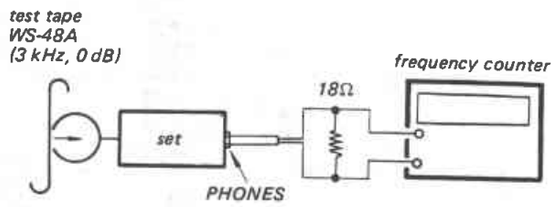
Mode	Torque Meter	Meter Reading
FWD	CQ-102C	23 – 40 g•cm 0.32 – 0.55 oz•inch
FWD Back Tension		1.5 – 3 g•cm 0.02 – 0.04 oz•inch
REV	CQ-102RB	23 – 40 g•cm 0.32 – 0.55 oz•inch
REV Back Tension		1.5 – 3 g•cm 0.02 – 0.04 oz•inch
FF	CQ-201B	more than 60 g•cm more than 0.83 oz•inch
REW		more than 60 g•cm more than 0.83 oz•inch

Tape Pulling Force Measurement

Mode	Tension Meter	Meter Reading
FWD	CQ-403A	more than 50 g more than 1.76 oz
REV	CQ-403R	more than 50 g more than 1.76 oz

Tape Speed Adjustment

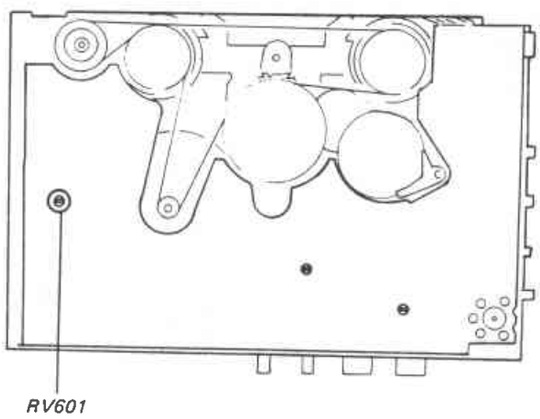
Procedure:



1. Playback WS-48A (Tape center portion) in FWD mode.
   Adjust the RV601 so that the frequency counter reads 3,000 Hz ±10 Hz.
2. Playback WS-48A (Tape center portion) in REV mode.
   Confirm that the reading of frequency counter is within 1.5% from the reading in step 1.

Adjustment Location:

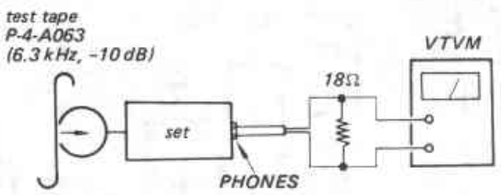
Main Board – Side B –



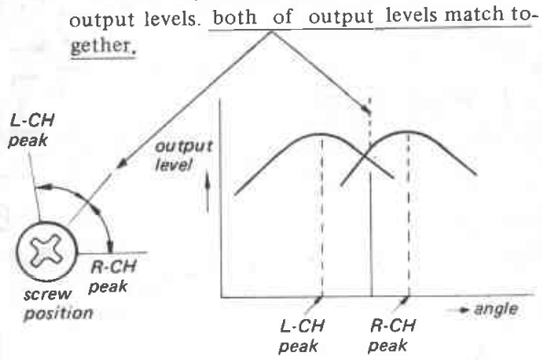
Playback Head Azimuth Adjustment

Procedure:

1. Playback mode

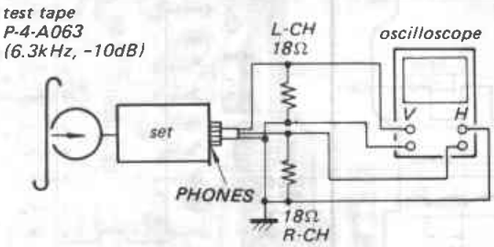


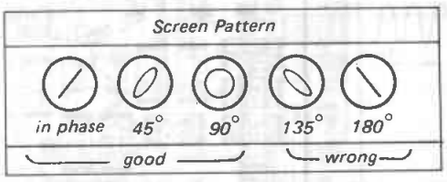
2. Turn the adjustment screw for the maximum output levels. both of output levels match together.



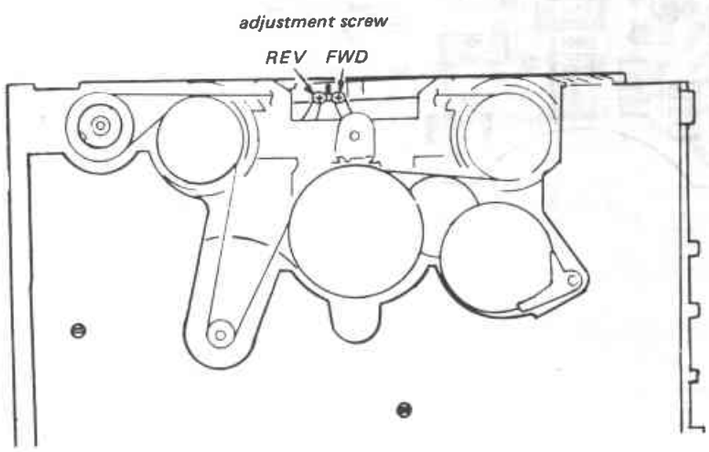
3. Press the stop button.
4. Open and close the cassette holder and make sure that playback level does not decrease.
5. Adjustment should be made in both directions of FWD and REV.
   Adjustment screws should be stopped turning in the clockwise direction.
   After the adjustment, lock the screws with locking compound.

6. Phase Check





Adjustment Location:



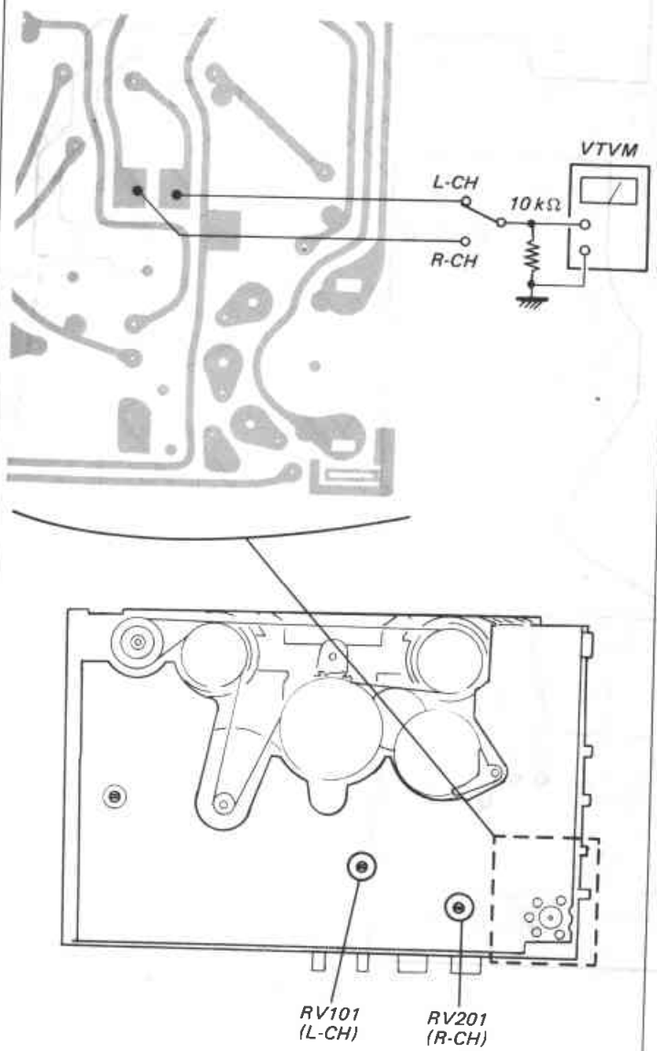
Playback Level Adjustment

DOLBY NR switch . . . . . OFF
VOL knob . . . . . MINIMUM

Procedure:

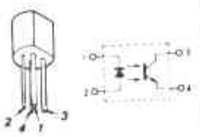
1. Playback mode

2. Adjust RV101 (L-CH), RV201 (R-CH) so that the VTVM reading is −20.5 ±0.5 dB (0.07 V – 0.077 V).

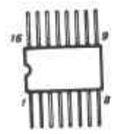


• Semiconductor Lead Layouts

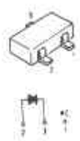
NJL5141E



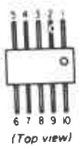
TA7739F



DA106K
RD3.9M-B1

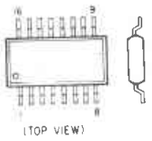


LA4535M

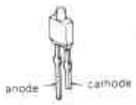


1SS123

NJM2063AM

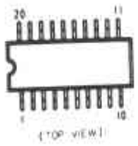


GL2PR9

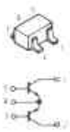


2SA1162
2SB624-BV4
2SC2712
2SD596
DTA114TK
DTC114TK

CX20123



FMG4
FMS1
TA86E



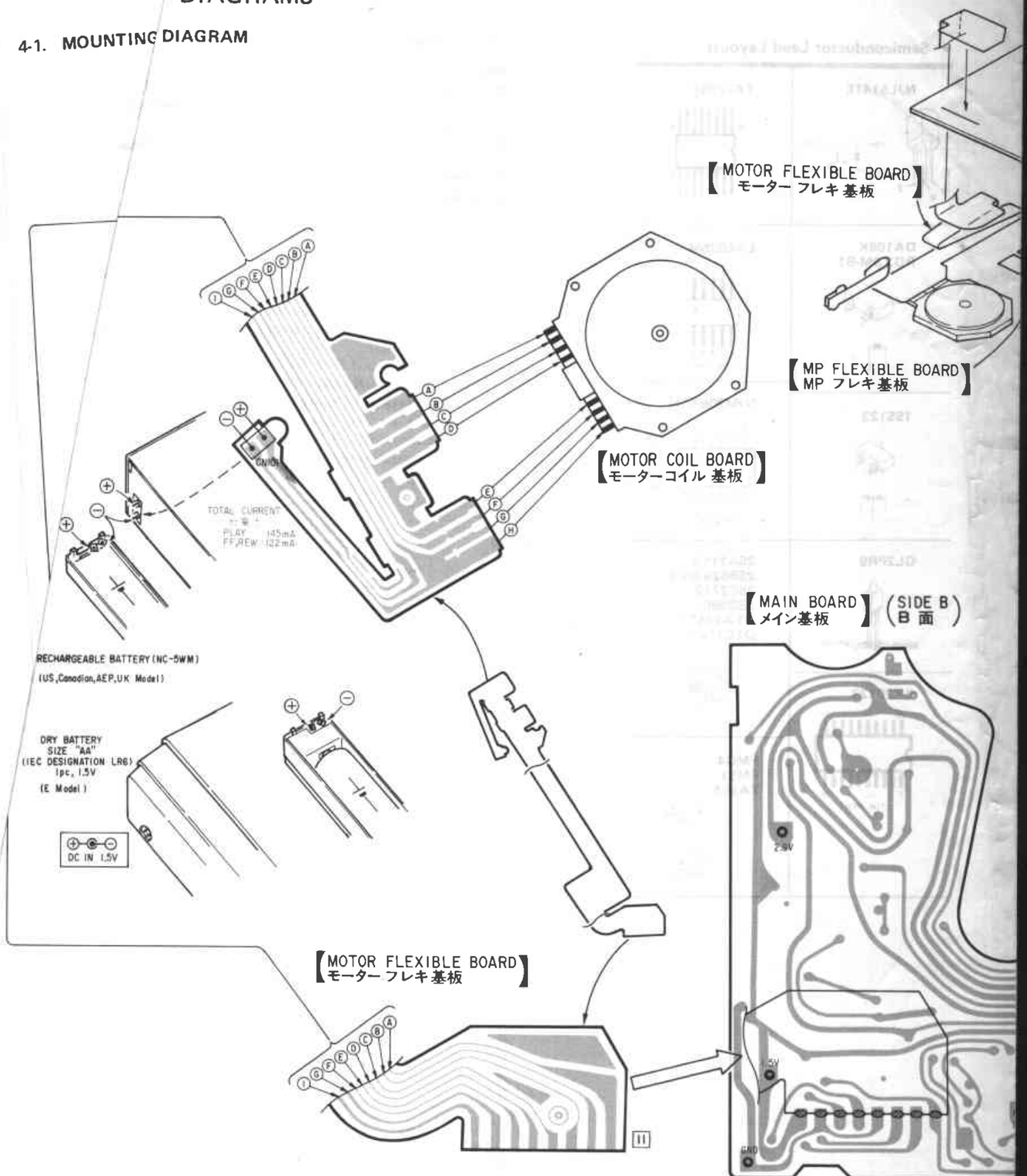
– For Schematic Diagram –

Note:

- All capacitors are in μF unless otherwise noted. p: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- : L-CH signal path
- : R-CH signal path
- : B+ bus.
- Total current is measured with no cassette installed.
- Readings are taken under no-signal conditions with VOM (50 kΩ/V).
  No mark: PLAY
  ( ) : When the square wave of 20 Hz, 0 dB (0.775 V is applied to collector of photo transistor (PH701).
- Power voltage is 1.5 V and fed with stabilized power supply from DC IN jack.
  Voltages are dc with respect to ground in STOP mode.
- Waveforms are taken to ground in no-signal mode by using oscilloscope.
  Voltage variations may be noted due to normal production tolerances.

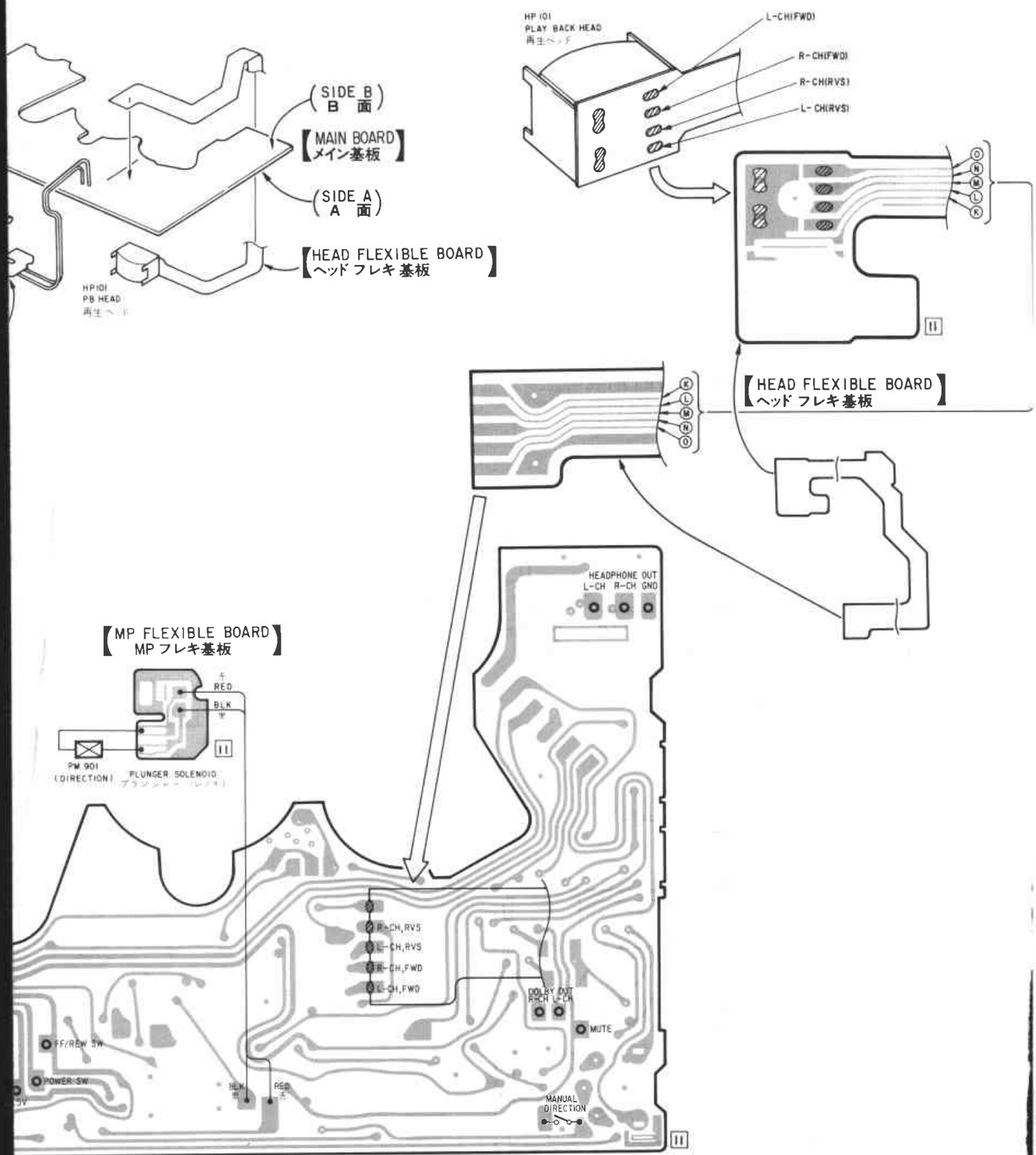
SECTION 4
DIAGRAMS

4-1. MOUNTING DIAGRAM

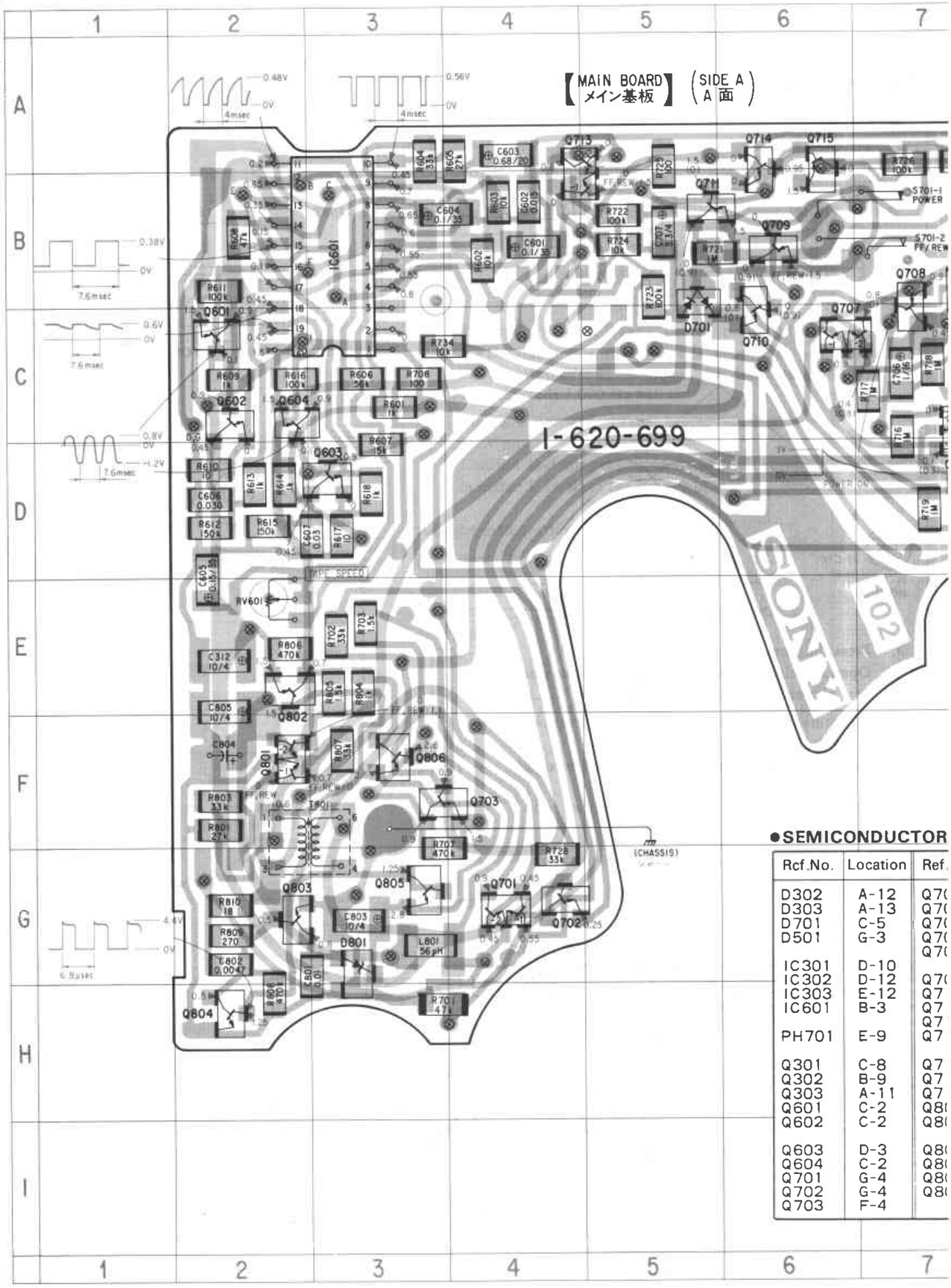


Note:

- ●—— : parts extracted from the component side.
- ⊗ : Through hole.
- ▒▒ : component-side pattern.


(SIDE B
B 面)
【MAIN BOARD
メイン基板】
(SIDE A
A 面)
【HEAD FLEXIBLE BOARD
ヘッド フレキ基板】
HP101
PB HEAD
再生ヘッド
HP101
PLAY BACK HEAD
再生ヘッド
L-CH(FWD)
R-CH(FWD)
R-CH(RVS)
L-CH(RVS)
【HEAD FLEXIBLE BOARD
ヘッド フレキ基板】
【MP FLEXIBLE BOARD
MP フレキ基板】
RED
BLK
PM 901
(DIRECTION)
PLUNGER SOLENOID
HEADPHONE OUT
L-CH R-CH GND
R-CH,RVS
L-CH,RVS
R-CH,FWD
L-CH,FWD
DOLBY OUT
R-CH L-CH
MUTE
FF/REW SW
POWER SW
MANUAL
DIRECTION

● See page 12 for Semiconductor Lead Layouts.



● SEMICONDUCTOR

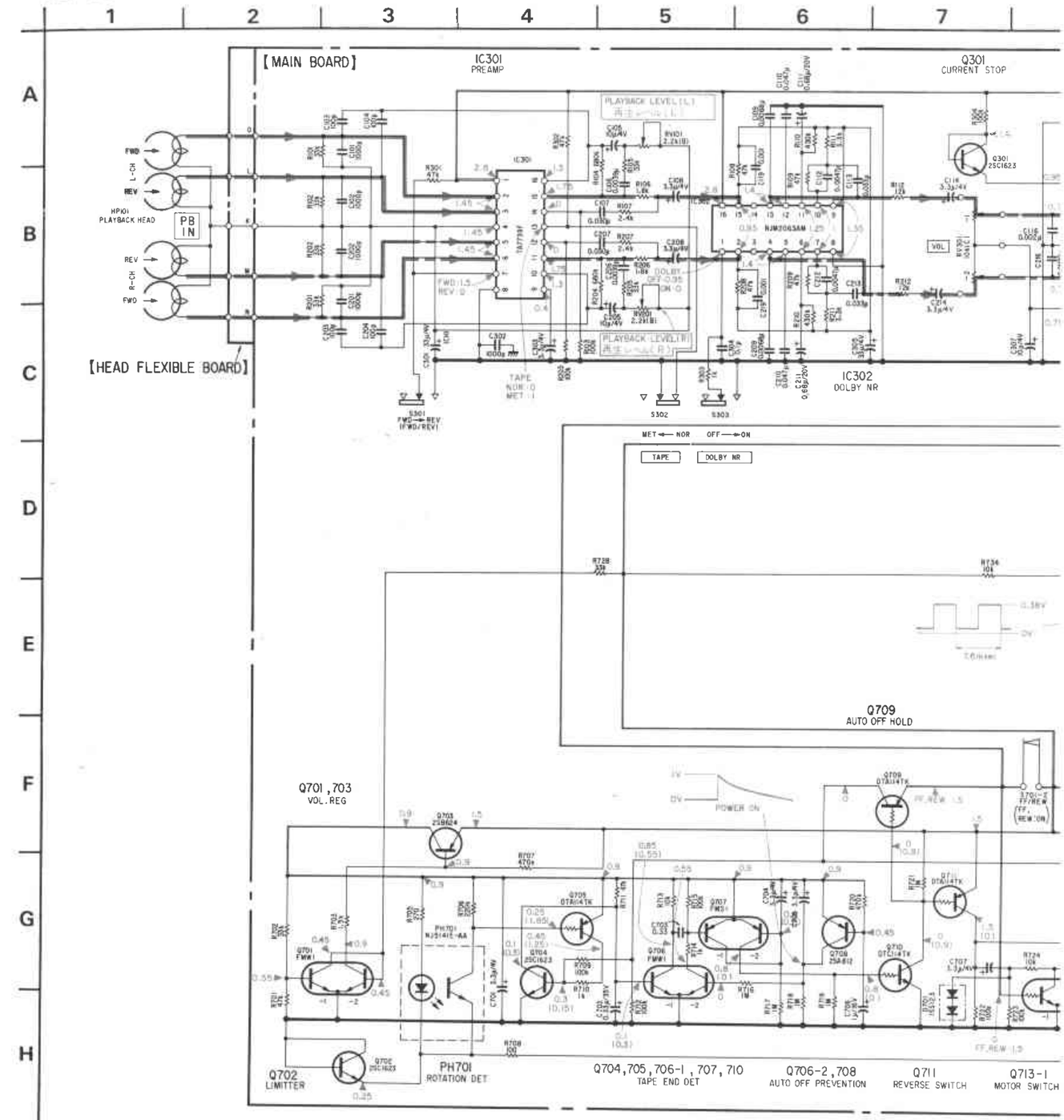
Rcf.No.	Location	Ref.
D302	A-12	Q7(
D303	A-13	Q7(
D701	C-5	Q7(
D501	G-3	Q7(
		Q7(
IC301	D-10	
IC302	D-12	Q7(
IC303	E-12	Q7
IC601	B-3	Q7
		Q7
PH701	E-9	Q7
Q301	C-8	Q7
Q302	B-9	Q7
Q303	A-11	Q7
Q601	C-2	Q8(
Q602	C-2	Q8(
Q603	D-3	Q8(
Q604	C-2	Q8(
Q701	G-4	Q8(
Q702	G-4	Q8(
Q703	F-4	

CATION

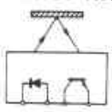
Location
D-8
E-8
C-7
C-6
B-7
B-6
C-6
B-5
A-5
A-6
B-5
B-10
B-4
F-2
E-2
G-2
H-2
G-3
F-3

4-2. SCHEMATIC DIAGRAM

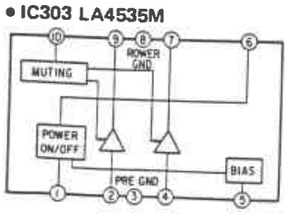
• See page 12 for Note.



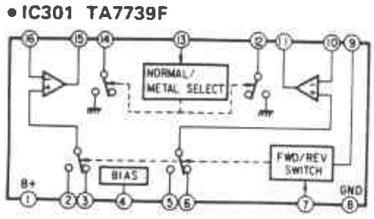
• PH701 NJL5141E-AA



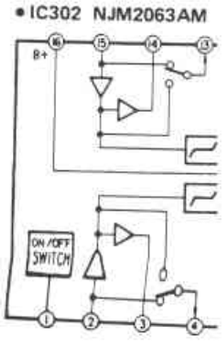
• IC303 LA4535M



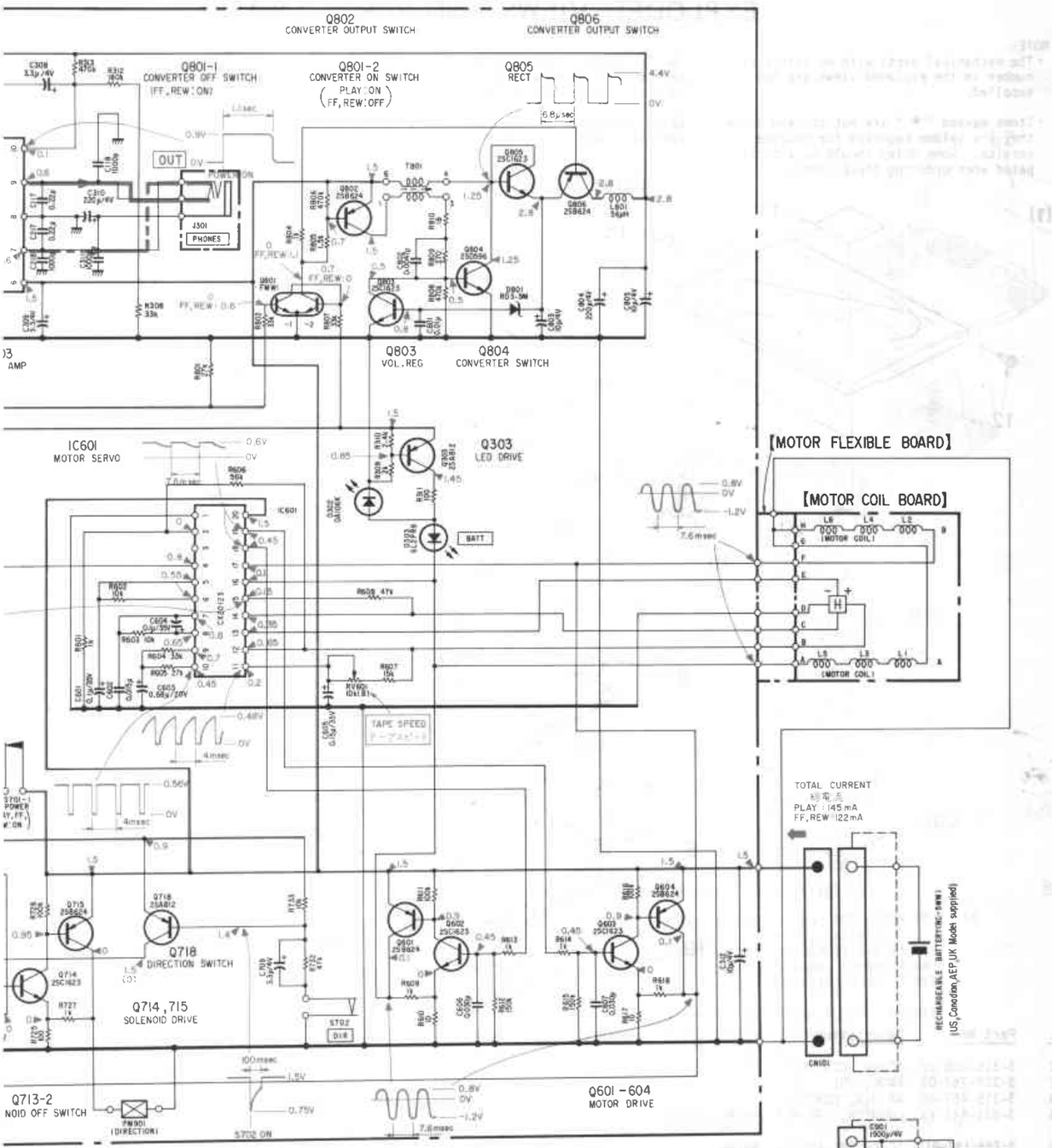
• IC301 TA7739F

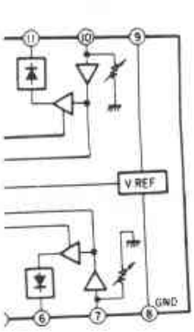


• IC302 NJM2063AM

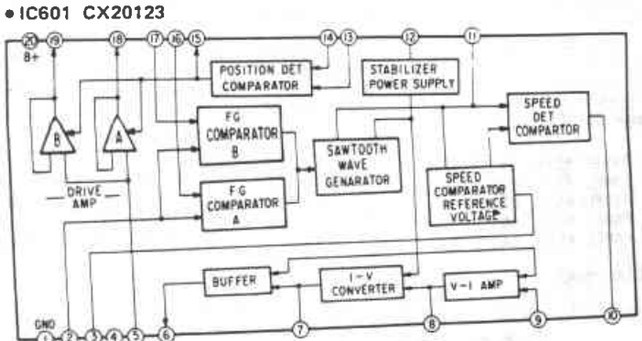


9 | 10 | 11 | 12 | 13 | 14 | 15





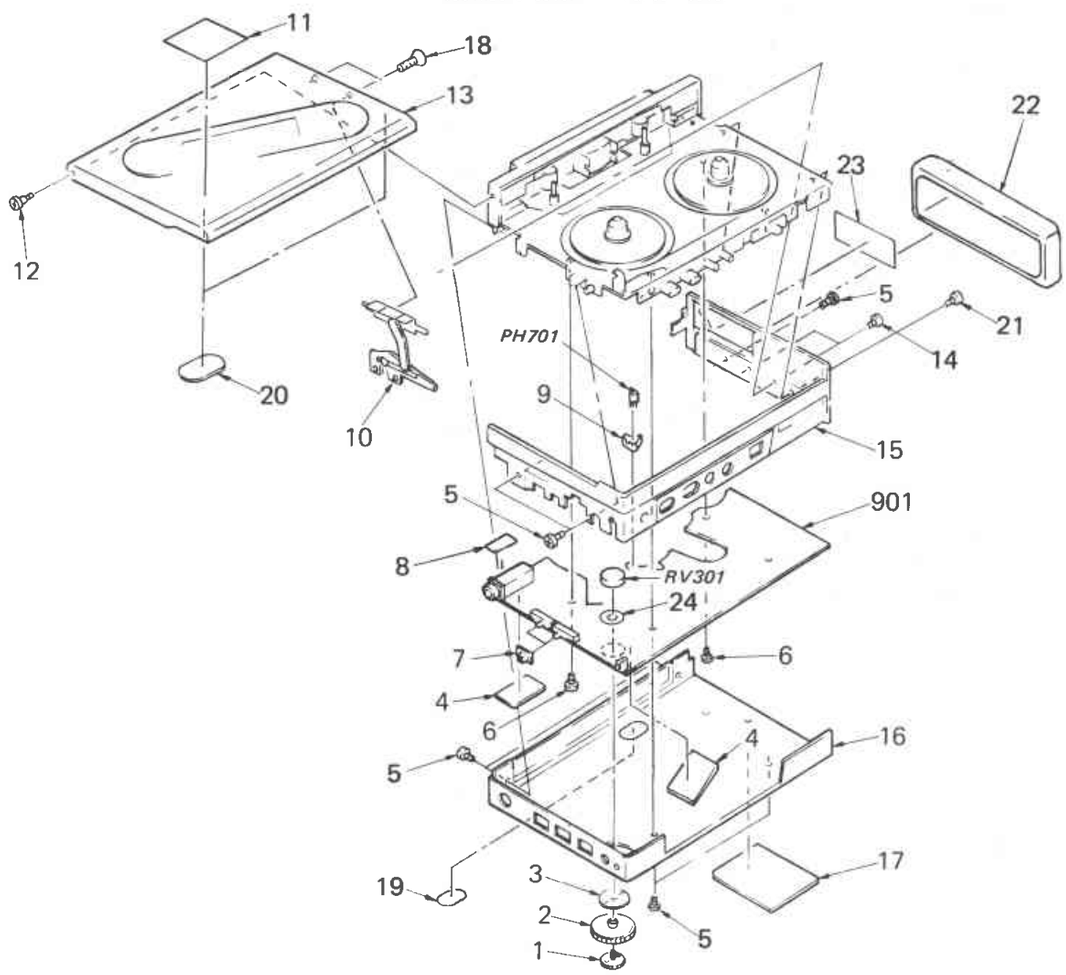
• IC601 CX20123



SECTION 5
EXPLODED VIEWS AND PARTS LIST

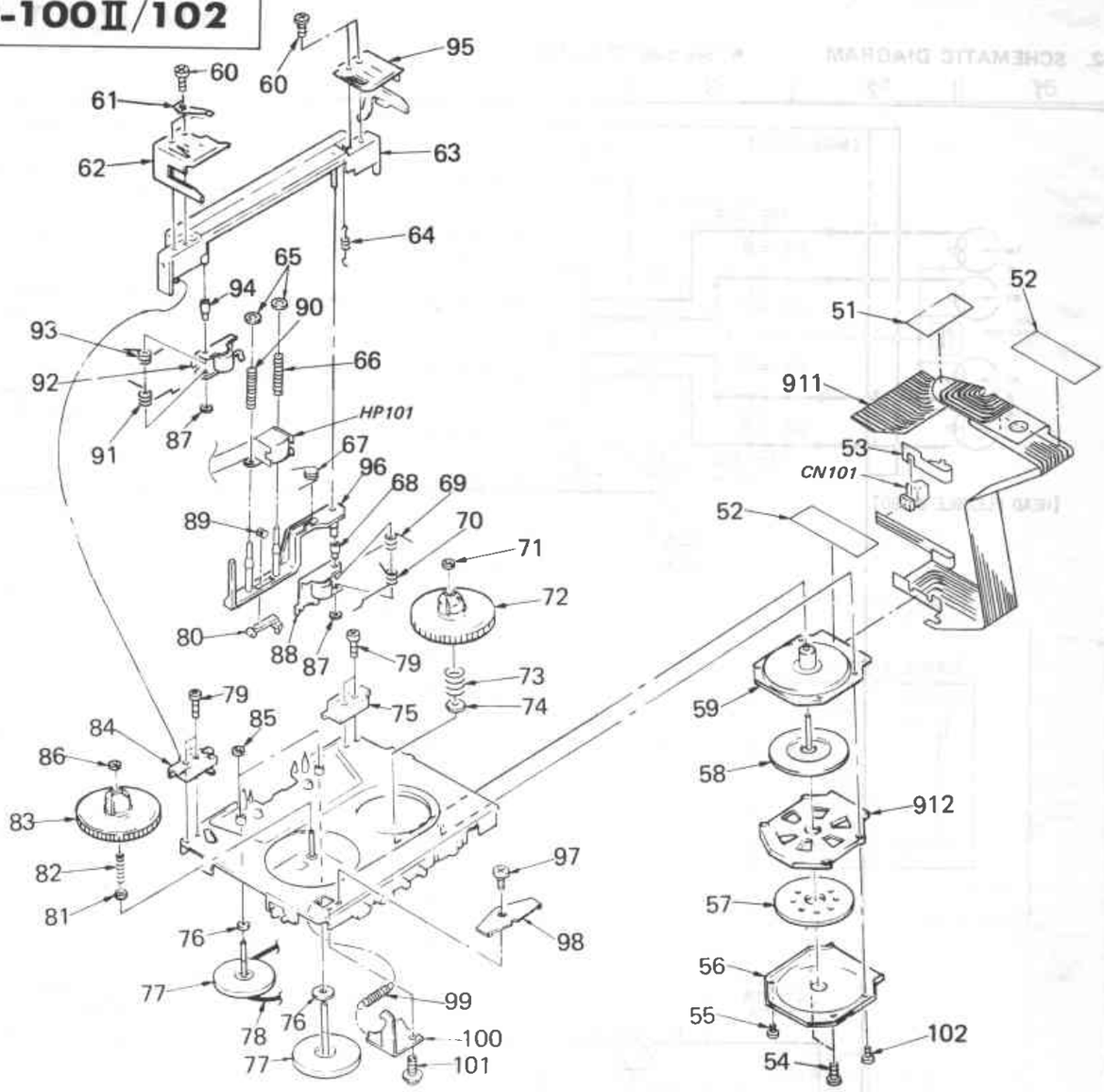
NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked " ★ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Color Indication of Appearance Parts
  Example: (RED) ..... KNOB, BALANCE (WHITE)
  (RED) = Cabinet's Color; (WHITE) = Parts' Color

(1)



No.	Part No.	Description	Remarks
1	3-315-308-00	SCREW, CONTROL	
2	3-329-767-01	KNOB, VOL	
3	3-315-467-00	WASHER, CONTROL	
4	3-831-441-XX	CUSHION, CABINET UPPER 10X7X0.3	
5	**3-704-197-01**	SCREW (M1.4X1.6), **NYLON**	
6	3-703-816-01	SCREW (M1.4X2.0), SPECIAL HEAD	
7	3-329-762-01	KNOB, SW	
8	3-703-929-01	SPACER (P)	
9	3-329-761-01	ADJUSTOR, REFLECTOR	
10	X-3329-745-1	BRACKET ASSY, ARM	
11	3-703-710-01	STICKER, SONY SYMBOL (12)	
12	3-329-766-01	SCREW (M1.4X2.95), STEP	
13	X-3329-726-1	(AEP,UK,E:BLACK).....PANEL ASSY, CASSETTE	
	X-3329-727-1	(AEP,UK,E:SILVER).....PANEL ASSY, CASSETTE	
	X-3329-728-1	(AEP,UK,E:RED).....PANEL ASSY, CASSETTE	
	X-3329-780-1	(US,Canadian:SILVER)..PANEL ASSY, CASSETTE	
	X-3329-781-1	(US,Canadian:BLACK)...PANEL ASSY, CASSETTE	
14	3-703-816-31	SCREW (M1.4X1.6), SPECIAL HEAD	
15	3-335-950-01	ORNAMENT, REEL	
16	X-3329-735-1	(BLACK)....PANEL ASSY, CONTROL	
	X-3329-736-1	(SILVER)...PANEL ASSY, CONTROL	
	X-3329-737-1	(RED).....PANEL ASSY, CONTROL	
17	3-335-975-01	(AEP,UK,E:RED,SILVER)..LABEL, MODEL NUMBER	
	3-335-975-11	(AEP,UK,E:BLACK).....LABEL, MODEL NUMBER	
	3-338-620-01	(US,Canadian:SILVER)...LABEL, MODEL NUMBER	
	3-338-620-11	(US,Canadian:BLACK)....LABEL, MODEL NUMBER	
18	7-627-451-07	SCREW, PRECISION +K 1.4X1.6	
19	3-333-162-01	(SILVER)...SHEET, AZIMUTH HOLE	
	3-333-162-11	(BLACK)....SHEET, AZIMUTH HOLE	
	3-333-162-21	(RED).....SHEET, AZIMUTH HOLE	
20	3-323-130-01	CUSHION, CASSETTE	
21	**3-704-197-11**	**SCREW (M1.4X2.0), NYLON**	
22	X-3329-743-1	CASE (A) ASSY, R BATTERY **(FOR RECHARGEABLE BATTERY)**	
23	3-527-213-00	(Canadian,AEP,UK,E)..LABEL, SERIAL NUMBER	
	*3-701-999-00	(US)...LABEL, SERIAL NUMBER	
24	3-330-442-01	SHEET, ADHESIVE, VOL	
901	A-3070-181-A	PC BOARD ASSY, AU	
PH701	8-719-751-42	DIODE NJL5141E-AA	
RV301	1-230-955-11	RES, VAR, CARBON 10K/10K **(VOL)**	

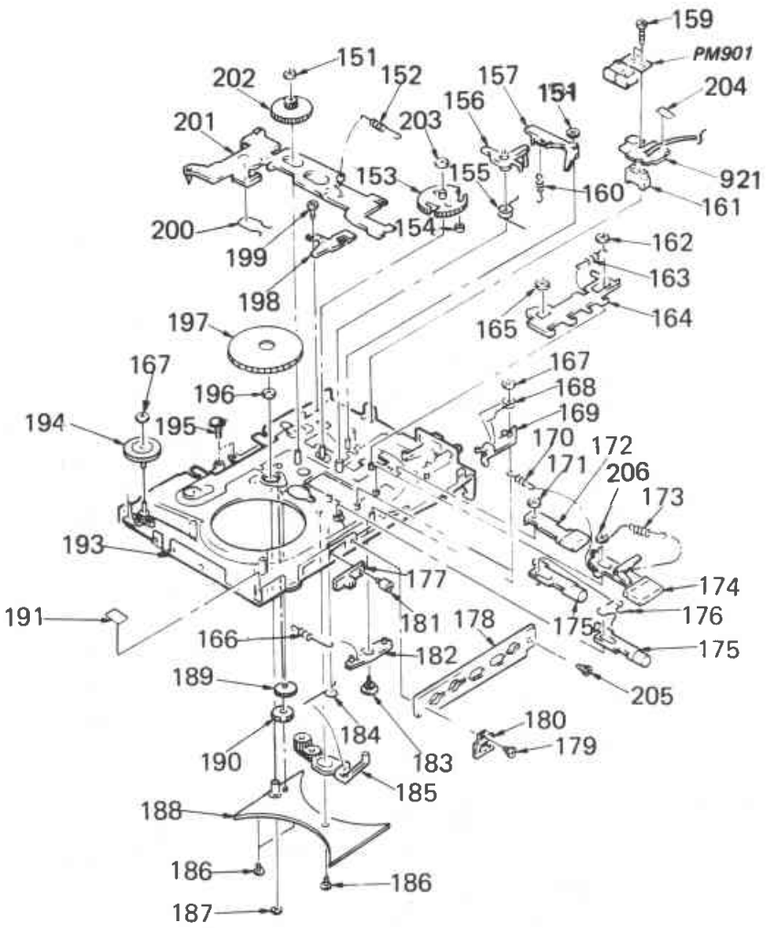
(2)



No.	Part No.	Description	Remarks
51	3-485-343-01	CUSHION, CABINET UPPER 10X7X0.5	
52	3-703-929-01	SHEET, INSULATING	
53	3-335-977-01	SPRING	
54	3-703-816-92	SCREW (M1.4X2.8), SPECIAL HEAD	
55	3-703-816-62	SCREW (M1.4X2.2), SPECIAL HEAD	
56	*3-333-126-01	PLATE (R), SHIELD, MOTOR	
57	3-333-173-01	PLATE (S), HYSTERESIS	
58	A-3133-236-A	WHEEL BLOCK ASSY, MOTOR	
59	X-3329-625-1	CHASSIS ASSY, MOTOR	
60	7-627-551-98	PRECISION SCREW +P 1.4X2.2	
61	*3-331-087-01	SPRING	
62	3-329-714-01	HOLDER (RIGHT), CASSETTE	
63	X-3329-719-1	HOLDER (D) ASSY	
64	3-331-012-01	SPRING (HOLDER), TENSION	
65	3-335-902-01	WASHER	
66	3-337-942-01	SPRING, COMPRESSION (PB)	
67	3-337-963-11	SPRING	
68	3-331-027-01	COLLAR (R), PINCH LEVER	
69	3-329-643-01	SPRING (R)	
70	3-329-641-01	SPRING (R)	
71	3-578-242-21	WASHER	
72	3-329-729-01	GEAR, SUPPLY REEL	
73	3-331-014-01	SPRING, COMPRESSION	
74	3-320-354-01	WASHER	
75	3-329-736-01	GUIDE (RIGHT), HOLDER	
76	3-321-394-21	WASHER	
77	X-3329-670-1	FLYWHEEL ASSY (N)	
78	3-329-695-01	BELT	

No.	Part No.	Description	Remarks
79	7-627-552-48	SCREW, PRECISION +P 1.7X4	
80	3-333-101-01	LEVER, AZIMUTH	
81	3-315-415-21	WASHER (1.5-2.3)	
82	3-331-013-01	SPRING, COMPRESSION	
83	X-3329-705-1	GEAR (R) ASSY, T REEL	
84	3-329-737-01	GUIDE (LEFT), HOLDER	
85	3-331-007-01	WASHER	
86	3-578-242-21	WASHER	
87	3-331-036-01	WASHER	
88	X-3329-602-1	PINCH LEVER (R) ASSY	
89	3-333-102-01	SHAFT, AZIMUTH	
90	3-337-943-01	SPRING, COMPRESSION (PA)	
91	3-329-642-01	SPRING (N)	
92	X-3329-601-1	PINCH LEVER (N) ASSY	
93	3-329-640-01	SPRING (N)	
94	3-329-637-01	COLLAR, PINCH LEVER	
95	3-329-713-01	HOLDER (LEFT), CASSETTE	
96	X-3329-765-1	LEVER ASSY, HEAD	
97	3-333-124-01	SCREW (M1.4), STEP, PRECISION	
98	*3-335-942-01	LEVER (B), EJECT	
99	3-337-964-01	SPRING, TENSION (EJECT LEVER A)	
100	*3-335-943-01	LEVER (A), EJECT	
101	3-703-502-01	SCREW (M1.4X2.8), EJECT LEVER (A)	
102	3-703-816-91	SCREW (M1.4X2.8), SPECIAL HEAD	
911	1-617-017-11	PC BOARD, MOTOR CONNECTION	
912	1-462-230-11	COIL, MOTOR (STATOR)	
CN101	1-506-573-12	CONNECTOR 2P	
HP101	1-543-310-11	HEAD, MAGNETIC (PLAYBACK)	

(3)



No.	Part No.	Description	Remarks
151	3-315-384-11	WASHER STOPPER	
152	3-337-962-01	SPRING, TENSION (DRIVING LEVER)	
153	3-329-730-01	GEAR, CAM	
154	3-329-693-01	COLLAR, CAM GEAR	
155	3-329-700-01	SPRING, LEVER (A) SHUT-OFF	
156	3-329-733-01	LEVER (A), SHUT-OFF	
157	X-3329-615-1	LEVER ASSY, TRIGGER	
159	7-627-551-37	SCREW, PRECISION +P 1.4X5	
160	3-331-011-01	SPRING (TRIGGER LEVER), TENSION	
161	*3-331-041-01	BRACKET, P	
162	3-578-224-00	WASHER, LEVER LOCK	
163	3-331-009-01	SPRING (LOCK LEVER), TENSION	
164	3-329-731-01	LEVER, LOCK	
165	3-311-815-21	WASHER, POLYETHYLENE	
166	3-331-018-01	SPRING, TENSION	
167	3-331-036-11	WASHER, SW	
168	3-329-702-01	SPRING, SW	
169	3-329-692-05	LEVER, SW	
170	3-331-010-01	SPRING (STOP LEVER), TENSION	
171	3-315-414-00	WASHER, PLAY	
172	X-3329-679-1	LEVER ASSY, PLAY	
173	3-331-111-01	SPRING, TENSION	
174	X-3329-678-1	LEVER ASSY, STOP	
175	X-3329-696-1	LEVER (A) ASSY, FR	
176	3-331-016-01	SPRING, FR	
177	3-329-769-01	KNOB, SAFETY LOCK	
178	*3-329-734-01	HOLDER, BUTTON	
179	3-703-816-02	SCREW (M1.4X2.0), SPECIAL HEAD	

No.	Part No.	Description	Remarks
180	3-331-043-01	SPRING	
181	3-329-697-01	SCREW, STEP, PRECISION	
182	X-3329-617-1	LEVER (B) ASSY, DRIVING	
183	3-331-056-01	SHAFT, DRIVING LEVER (B)	
184	3-329-699-01	SPRING, LEVER (B) FR	
185	X-3329-626-1	LEVER (B) ASSY, F.R	
186	3-331-047-01	SCREW (M1.4X1.4), SPECIAL HEAD	
187	3-331-007-01	WASHER	
188	X-3329-618-1	COVER ASSY, REEL	
189	3-329-688-01	GEAR (A), T	
190	3-329-689-01	GEAR (B), T	
191	3-327-119-01	SHEET (B), INSULATING	
193	X-3329-635-2	CHASSIS COMPLETE ASSY	
194	3-329-686-01	WHEEL, REVERSE	
195	3-331-097-01	SCREW, AZIMUTH	
196	3-321-394-21	WASHER	
197	X-3329-628-1	PULLEY COMPLETE ASSY, MIDWAY	
198	3-329-685-01	SPRING (A), NR	
199	3-331-008-01	SCREW (M1.4X1.1) (1), PRECISION	
200	3-329-698-01	SPRING (B), NR	
201	X-3329-755-1	LEVER (AD) (P) ASSY, DRIVING	
202	3-329-687-01	GEAR, DRIVING	
203	3-578-242-11	WASHER, CAM GEAR	
204	3-703-929-01	SPACER, SWITCH	
205	3-703-816-31	SCREW (M1.4X1.6), SPECIAL HEAD	
206	3-578-224-11	WASHER, STOP	
921	1-617-019-11	PC BOARD, MP FLEXIBLE	
PM901	1-454-406-11	SOLENOID, PLUNGER	

NOTE:

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuitsin a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms.
- F : nonflammable

COILS
- MMH : mH, UH : μH

SEMICONDUCTORS
In each case, U : μ, for example:
UA...: μA..., UPA...: μPA..., UPC...: μPC, UPD...: μPD...

ELECTRICAL PARTS

Ref.No.	Part No.	Description		
901	A-3070-181-A	PC BOARD ASSY, AU		
911	1-617-017-11	PC BOARD, MOTOR CONNECTION		
912	1-462-230-11	COIL, MOTOR (STATOR)		
921	1-617-019-11	PC BOARD, MP FLEXIBLE		
C101	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C102	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C103	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C104	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C105	1-135-104-00	TANTAL. CHIP 10MF	10%	4V
C106	1-163-016-00	CERAMIC CHIP 0.0039MF	10%	50V
C107	1-163-810-00	CERAMIC CHIP 0.03MF	10%	25V
C108	1-135-103-00	TANTAL. CHIP 3.3MF	10%	4V
C109	1-163-019-00	CERAMIC CHIP 0.0068MF	10%	50V
C110	1-163-075-00	CERAMIC CHIP 0.047MF	10%	25V
C111	1-135-087-21	TANTAL. CHIP 0.68MF	10%	20V
C112	1-163-017-00	CERAMIC CHIP 0.0047MF	5%	50V
C113	1-163-074-00	CERAMIC CHIP 0.033MF	5%	25V
C114	1-135-103-00	TANTAL. CHIP 3.3MF	10%	4V
C116	1-163-013-00	CERAMIC CHIP 0.0022MF	10%	50V
C117	1-163-081-00	CERAMIC CHIP 0.22MF		25V
C118	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C119	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C201	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C202	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C203	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C204	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C205	1-135-104-00	TANTAL. CHIP 10MF	10%	4V
C206	1-163-016-00	CERAMIC CHIP 0.0039MF	10%	50V
C207	1-163-810-00	CERAMIC CHIP 0.03MF	10%	25V
C208	1-135-103-00	TANTAL. CHIP 3.3MF	10%	4V
C209	1-163-019-00	CERAMIC CHIP 0.0068MF	10%	50V
C210	1-163-075-00	CERAMIC CHIP 0.047MF	10%	25V
C211	1-135-087-21	TANTAL. CHIP 0.68MF	10%	20V
C212	1-163-017-00	CERAMIC CHIP 0.0047MF	5%	50V
C213	1-163-074-00	CERAMIC CHIP 0.033MF	5%	25V
C214	1-135-103-00	TANTAL. CHIP 3.3MF	10%	4V
C216	1-163-013-00	CERAMIC CHIP 0.0022MF	10%	50V
C217	1-163-081-00	CERAMIC CHIP 0.22MF		25V
C218	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C219	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C301	1-124-431-00	ELECT 33MF	20%	4V
C302	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C303	1-135-103-00	TANTAL. CHIP 3.3MF	10%	4V
C304	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C305	1-124-431-00	ELECT 33MF	20%	4V
C307	1-135-104-00	TANTAL. CHIP 10MF	10%	4V

ELECTRICAL PARTS

Ref.No.	Part No.	Description		
C308	1-135-103-00	TANTAL. CHIP 3.3MF	10%	4V
C309	1-135-103-00	TANTAL. CHIP 3.3MF	10%	4V
C310	1-124-413-00	ELECT 220MF	20%	4V
C311	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C312	1-135-104-00	TANTAL. CHIP 10MF	10%	4V
C601	1-135-070-00	TANTAL. CHIP 0.1MF	10%	35V
C602	1-163-023-00	CERAMIC CHIP 0.015MF	10%	50V
C603	1-135-087-21	TANTAL. CHIP 0.68MF	10%	20V
C604	1-135-070-00	TANTAL. CHIP 0.1MF	10%	35V
C605	1-135-071-21	TANTAL. CHIP 0.15MF	10%	35V
C606	1-163-810-00	CERAMIC CHIP 0.03MF	10%	25V
C607	1-163-810-00	CERAMIC CHIP 0.03MF	10%	25V
C701	1-135-103-00	TANTAL. CHIP 3.3MF	10%	4V
C702	1-135-073-00	TANTAL. CHIP 0.33MF	10%	35V
C703	1-135-073-00	TANTAL. CHIP 0.33MF	10%	35V
C704	1-135-103-00	TANTAL. CHIP 3.3MF	10%	4V
C705	1-135-103-00	TANTAL. CHIP 3.3MF	10%	4V
C706	1-135-091-00	TANTAL. CHIP 1MF	10%	16V
C707	1-135-103-00	TANTAL. CHIP 3.3MF	10%	4V
C709	1-135-103-00	TANTAL. CHIP 3.3MF	10%	4V
C801	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C802	1-163-017-00	CERAMIC CHIP 0.0047MF	10%	50V
C803	1-135-104-00	TANTAL. CHIP 10MF	10%	4V
C804	1-124-413-00	ELECT 220MF	20%	4V
C805	1-135-104-00	TANTAL. CHIP 10MF	10%	4V
CN101	1-506-573-12	CONNECTOR 2P		
D302	8-719-908-30	DIODE DA106K		
D303	1-807-305-11	DIODE GL2PR9 (LED)		
D701	8-719-104-22	DIODE 1SS123		
D801	8-719-105-57	DIODE RD3.9M-B1		
HP101	1-543-310-11	HEAD, MAGNETIC (PLAYBACK)		
IC301	8-759-203-85	IC TA7739F		
IC302	8-759-701-07	IC NJM2063AM		
IC303	8-759-802-80	IC LA4535M		
IC601	8-752-012-32	IC CX20123		
J301	1-562-974-11	JACK (PHONE)		
L801	1-410-213-51	INDUCTOR CHIP 56UH		
PH701	8-719-751-42	DIODE NJL5141E-AA		
PM901	1-454-406-11	SOLENOID, PLUNGER		
Q301	8-729-271-29	TRANSISTOR 2SC2712		
Q303	8-729-216-22	TRANSISTOR 2SA1162		
Q601	8-729-162-44	TRANSISTOR 2SB624-BV4		

ELECTRICAL PARTS

Ref.No.	Part No.	Description
Q602	8-729-271-29	TRANSISTOR 2SC2712
Q603	8-729-271-29	TRANSISTOR 2SC2712
Q604	8-729-162-44	TRANSISTOR 2SB624-BV4
Q701	8-729-902-38	TRANSISTOR TA86E
Q702	8-729-271-29	TRANSISTOR 2SC2712
Q703	8-729-162-44	TRANSISTOR 2SB624-BV4
Q704	8-729-271-29	TRANSISTOR 2SC2712
Q705	8-729-900-51	TRANSISTOR DTA114TK
Q706	8-729-902-38	TRANSISTOR TA86E
Q707	8-729-902-96	TRANSISTOR FMS1
Q708	8-729-216-22	TRANSISTOR 2SA1162
Q709	8-729-900-51	TRANSISTOR DTA114TK
Q710	8-729-902-99	TRANSISTOR DTC114TK
Q711	8-729-900-51	TRANSISTOR DTA114TK
Q713	8-729-902-93	TRANSISTOR FMG4
Q714	8-729-271-29	TRANSISTOR 2SC2712
Q715	8-729-162-44	TRANSISTOR 2SB624-BV4
Q718	8-729-216-22	TRANSISTOR 2SA1162
Q801	8-729-902-38	TRANSISTOR TA86E
Q802	8-729-162-44	TRANSISTOR 2SB624-BV4
Q803	8-729-271-29	TRANSISTOR 2SC2712
Q804	8-729-159-64	TRANSISTOR 2SD596
Q805	8-729-271-29	TRANSISTOR 2SC2712
Q806	8-729-162-44	TRANSISTOR 2SB624-BV4
R101	1-216-085-00	METAL CHIP 33K 5% 1/10W
R102	1-216-085-00	METAL CHIP 33K 5% 1/10W
R103	1-216-097-00	METAL CHIP 100K 5% 1/10W
R104	1-216-117-00	METAL CHIP 680K 5% 1/10W
R105	1-216-085-00	METAL CHIP 33K 5% 1/10W
R106	1-216-055-00	METAL CHIP 1.8K 5% 1/10W
R107	1-216-058-00	METAL CHIP 2.4K 5% 1/10W
R108	1-216-089-00	METAL CHIP 47K 5% 1/10W
R109	1-216-089-00	METAL CHIP 47K 5% 1/10W
R110	1-216-112-00	METAL CHIP 430K 5% 1/10W
R111	1-216-061-00	METAL CHIP 3.3K 5% 1/10W
R112	1-216-075-00	METAL CHIP 12K 5% 1/10W
R201	1-216-085-00	METAL CHIP 33K 5% 1/10W
R202	1-216-085-00	METAL CHIP 33K 5% 1/10W
R203	1-216-097-00	METAL CHIP 100K 5% 1/10W
R204	1-216-117-00	METAL CHIP 680K 5% 1/10W
R205	1-216-085-00	METAL CHIP 33K 5% 1/10W
R206	1-216-055-00	METAL CHIP 1.8K 5% 1/10W
R207	1-216-058-00	METAL CHIP 2.4K 5% 1/10W
R208	1-216-089-00	METAL CHIP 47K 5% 1/10W
R209	1-216-089-00	METAL CHIP 47K 5% 1/10W

ELECTRICAL PARTS

Ref.No.	Part No.	Description
R210	1-216-112-00	METAL CHIP 430K 5% 1/10W
R211	1-216-061-00	METAL CHIP 3.3K 5% 1/10W
R212	1-216-075-00	METAL CHIP 12K 5% 1/10W
R301	1-216-089-00	METAL CHIP 47K 5% 1/10W
R302	1-216-089-00	METAL CHIP 47K 5% 1/10W
R303	1-216-049-00	METAL CHIP 1K 5% 1/10W
R304	1-216-097-00	METAL CHIP 100K 5% 1/10W
R308	1-216-085-00	METAL CHIP 33K 5% 1/10W
R309	1-216-056-00	METAL CHIP 2K 5% 1/10W
R310	1-216-058-00	METAL CHIP 2.4K 5% 1/10W
R311	1-216-025-00	METAL CHIP 100 5% 1/10W
R312	1-216-103-00	METAL CHIP 180K 5% 1/10W
R313	1-216-113-00	METAL CHIP 470K 5% 1/10W
R601	1-216-049-00	METAL CHIP 1K 5% 1/10W
R602	1-216-073-00	METAL CHIP 10K 5% 1/10W
R603	1-216-073-00	METAL CHIP 10K 5% 1/10W
R604	1-216-085-00	METAL CHIP 33K 5% 1/10W
R605	1-216-083-00	METAL CHIP 27K 5% 1/10W
R606	1-216-091-00	METAL CHIP 56K 5% 1/10W
R607	1-216-077-00	METAL CHIP 15K 5% 1/10W
R608	1-216-089-00	METAL CHIP 47K 5% 1/10W
R609	1-216-049-00	METAL CHIP 1K 5% 1/10W
R610	1-216-001-00	METAL CHIP 10 5% 1/10W
R611	1-216-097-00	METAL CHIP 100K 5% 1/10W
R612	1-216-101-00	METAL CHIP 150K 5% 1/10W
R613	1-216-049-00	METAL CHIP 1K 5% 1/10W
R614	1-216-049-00	METAL CHIP 1K 5% 1/10W
R615	1-216-101-00	METAL CHIP 150K 5% 1/10W
R616	1-216-097-00	METAL CHIP 100K 5% 1/10W
R617	1-216-001-00	METAL CHIP 10 5% 1/10W
R618	1-216-049-00	METAL CHIP 1K 5% 1/10W
R701	1-216-089-00	METAL CHIP 47K 5% 1/10W
R702	1-216-085-00	METAL CHIP 33K 5% 1/10W
R703	1-216-053-00	METAL CHIP 1.5K 5% 1/10W
R705	1-216-035-00	METAL CHIP 270 5% 1/10W
R706	1-216-101-00	METAL CHIP 150K 5% 1/10W
R707	1-216-113-00	METAL CHIP 470K 5% 1/10W
R708	1-216-025-00	METAL CHIP 100 5% 1/10W
R709	1-216-097-00	METAL CHIP 100K 5% 1/10W
R710	1-216-049-00	METAL CHIP 1K 5% 1/10W
R711	1-216-089-00	METAL CHIP 47K 5% 1/10W
R712	1-216-097-00	METAL CHIP 100K 5% 1/10W
R713	1-216-073-00	METAL CHIP 10K 5% 1/10W
R714	1-216-049-00	METAL CHIP 1K 5% 1/10W
R715	1-216-097-00	METAL CHIP 100K 5% 1/10W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R716	1-216-121-00	METAL CHIP	1M	5%	1/10W
R717	1-216-121-00	METAL CHIP	1M	5%	1/10W
R718	1-216-121-00	METAL CHIP	1M	5%	1/10W
R719	1-216-121-00	METAL CHIP	1M	5%	1/10W
R720	1-216-113-00	METAL CHIP	470K	5%	1/10W
R721	1-216-121-00	METAL CHIP	1M	5%	1/10W
R722	1-216-097-00	METAL CHIP	100K	5%	1/10W
R723	1-216-097-00	METAL CHIP	100K	5%	1/10W
R724	1-216-073-00	METAL CHIP	10K	5%	1/10W
R725	1-216-025-00	METAL CHIP	100	5%	1/10W
R726	1-216-097-00	METAL CHIP	100K	5%	1/10W
R727	1-216-049-00	METAL CHIP	1K	5%	1/10W
R728	1-216-085-00	METAL CHIP	33K	5%	1/10W
R732	1-216-089-00	METAL CHIP	47K	5%	1/10W
R733	1-216-073-00	METAL CHIP	10K	5%	1/10W
R734	1-216-073-00	METAL CHIP	10K	5%	1/10W
R801	1-216-083-00	METAL CHIP	27K	5%	1/10W
R803	1-216-085-00	METAL CHIP	33K	5%	1/10W
R804	1-216-049-00	METAL CHIP	1K	5%	1/10W
R805	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R806	1-216-113-00	METAL CHIP	470K	5%	1/10W
R807	1-216-085-00	METAL CHIP	33K	5%	1/10W
R808	1-216-113-00	METAL CHIP	470K	5%	1/10W
R809	1-216-035-00	METAL CHIP	270	5%	1/10W
R810	1-216-007-00	METAL CHIP	18	5%	1/10W
RV101	1-237-002-11	RES, ADJ, METAL GLAZE 2.2K (L LEVEL)			
RV201	1-237-002-11	RES, ADJ, METAL GLAZE 2.2K (R LEVEL)			
RV301	1-230-955-11	RES, VAR, CARBON 10K/10K **(VOL)**			
RV601	1-237-004-11	RES, ADJ, METAL GLAZE 10K (TAPE SPEED)			
S301	1-570-396-11	SWITCH, SLIDE **(FWD/REV)**			
S302	1-570-397-11	SWITCH, SLIDE (TAPE)			
S303	1-570-397-11	SWITCH, SLIDE (DOLBY NR)			
S701	1-570-548-11	SWITCH, LEAF (POWER,FF/REW)			
S702	1-570-395-11	SWITCH, LEAF (DIR)			
T801	1-447-864-11	TRANSFORMER, DC-DC CONVERTER			

ACCESSORY & PACKING MATERIAL

Part No.	Description
1-528-052-11	(E)....BATTERY, ALKALINE, MANGANIN (LR6)
1-528-176-11	(US,Canadian,AEP,UK) ...BATTERY, STORAGE (NC-5WM)
1-528-221-11	(US).....BATTERY CHARGER (BC-7F)
1-528-224-11	(Canadian)...BATTERY CHARGER (BC-7F)
1-528-222-11	**(UK).....BATTERY CHARGER (BC-7F)**
1-528-223-11	**(AEP).....BATTERY CHARGER (BC-7F)**
3-335-958-02	(E).....INDIVIDUAL CARTON
3-335-963-01	(AEP,UK).....INDIVIDUAL CARTON
3-335-965-01	(US).....INDIVIDUAL CARTON
3-335-966-01	(Canadian)...INDIVIDUAL CARTON
3-335-959-01	CUSHION
3-335-960-01	LID, CUSHION
3-335-961-01	SPACER
3-337-975-01	CASE, CARRYING
3-527-213-02	(Canadian)...LABEL, SERIAL NUMBER
3-701-999-00	(US).....LABEL, SERIAL NUMBER
3-701-623-00	BAG, POLYETHYLENE
3-703-895-01	LABEL, COLOR (BLACK)
3-703-905-01	LABEL, COLOR (RED)
3-703-906-01	LABEL, COLOR (SILVER)
3-704-080-01	LABEL (RED), GENERAL DISCERN
3-704-086-01	LABEL (BLACK), GENERAL DISCERN
3-704-087-01	LABEL (SILVER), GENERAL DISCERN
3-765-698-11	(AEP,UK,E).....MANUAL, INSTRUCTION
3-765-698-21	(US,Canadian)...MANUAL, INSTRUCTION
3-765-698-31	(Canadian).....MANUAL, INSTRUCTION
3-765-698-41	(AEP).....MANUAL, INSTRUCTION
3-795-748-21	**(US ONLY)...SAFETY INSTRUCTIONS, HEADPHONE**
8-952-266-94	(US,Canadian,AEP,UK)..HEADPHONE MDR-A10L/B
8-952-321-90	(E).....HEADPHONE MDR-434/B
X-3329-742-1	**CASE (A) ASSY, BATTERY (DRY BATTERY)**
X-3329-743-1	**CASE (A) ASSY, R BATTERY (RECHARGEABLE)**

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